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25. NEW HOST PLANTS FOR TWO TROPICAL BUTTERFLIES AT VISAKHAPATNAM, ANDHRA PRADESH

During our investigations on the life-history strategies and larval performance of various butterfly species distributed in the environment of Visakhapatnam, a growing industrial city, we have recorded new host plants for the larvae of the Lemon Pansy *Junonia lemonias* (Linn.), Family Nymphalidae and the Common Yellow butterfly *Terias hecabe* (Linn.), Family Pieridae.

J. lemonias was found to lay eggs on *Asystasia gangetica* (Linn.) T. Anders (Acanthaceae), and all the five larval stages were found to feed on the leaves of *A. gangetica.* This is a new host plant, the known species being *Nelsonia campestris, Asteracantha longifolia* (Acanthaceae), and *Sida rhombifolia* (Malvaceae) (Wynter-Blyth 1957, BUTTERFLIES OF THE INDIAN REGION).

T. hecabe was observed to deposit eggs and the larvae to feed on the leaves of *Samanea saman* (Jacq.) Merril, *Mimosa pudica* (Linn.), *M. torta* Roxb., and *Peltophorum pterocarpum* (DC.) Baker ex Heyne (Caesalpiniaceae). Earlier, Wynter-Blyth (1957) listed *Cassia tora, C. fistula, Wagatea spicata* (Caesalpiniaceae), *Pithecolobium dulce, Albizzia* sp. (Mimosaceae), and *Sesbania aculeata* (Fabaceae) as the larval hosts of *T. hecabe.*

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26. SOME FRESHWATER MOLLUSCS FROM EASTERN AND CENTRAL NEPAL

(*With one text-figure*)

Nepal is a Himalayan kingdom, situated between 26° 30' N and 30° 15' N and between 80° 00' and 88° 15' E. A perusal of the literature shows a paucity of information on the molluscs

TABLE 1
MOLLUSCAN SPECIES OF NEPAL WITH THEIR DISTRIBUTION IN DIFFERENT DISTRICTS

Family/Genus	Species	Form	Site of Collection								
			Jha	Mor	Sun	Sap	Ud	Il	Kath	Lal	Dh
VIVIPARIDAE											
Bellamya	*bengalensis* (Lamarck, 1822)	f. *typica*	+	+	+	+	+	+	+	+	+
Bellamya	*bengalensis* (Kobalt, 1909)	f. *nepalensis*	+	+	+	+	+	-	-	-	-
Bellamya	*dissimilis* (Müller, 1774)	—	-	-	-	-	-	-	+	+	-
THIARIDAE											
Thiara (*Melanoides*)	*tuberculata* (Müller, 1774)	—	+	+	+	+	-	-	-	-	-
Thiara (I)	*scrŭba* (Müller, 1774)	—	+	+	+	-	-	+	-	+	+
Thiara (Tarebia)	*granifera* (Lamarck, 1822)	—	+	+	+	-	-	-	-	-	-
Brotia	*costula* (Rafinesque 1833)	—	+	+	+	+	-	-	+	-	-
Paludomus (P)	*blanfordiana* (Neville, 1877)	—	+	+	+	+	-	-	-	-	-
PILIDAE											
Pila	*globosa* (Swainson, 1822)	—	-	+	+	-	-	-	-	-	-
Pila	*theobaldi* (Henley, 1875)	—	-	+	+	-	-	-	-	-	-
LYMNAEDAE											
Lymnaea (Pseudosuccinea)	*acuminata* (Lamarck, 1822)	f. *typica*	+	+	+	+	-	-	+	+	-
Lymnaea	*luteola* (Lamarck, 1822)	f. *typica*	+	+	+	-	+	-	-	-	+
Lymnaea (*Pseudosuccinea*)	*luteola* (Gray, 1822)	f. *ovalis*	+	+	+	+	+	-	-	-	+
Lymnaea (*Pseudosuccinea*)	*luteola* (Deshayes, 1834)	f. *succinea*	-	+	+	+	-	-	+	+	-
Lymnaea (*Galba*)	*andersoniana* (Neville, 1881)	—	-	-	-	-	-	-	+	+	-
Lymnaea (*Galba*)	*hookeri* Reeve, 1850	—	+	+	+	-	-	-	-	-	-
PLANORBIDAE											
Indoplanorbis	*exustus* (Deshayes, 1834)	—	-	+	+	+	+	+	-	-	-
Gyraulus	*convexiusculus* (Hutton, 1849)	—	-	+	+	+	-	-	+	+	-
PHYSIDAE											
Physa	*acuta* (Draparnaud, 1801)	—	-	-	+	-	-	-	-	+	-

TABLE 1 (*contd.*)
MOLLUSCAN SPECIES OF NEPAL WITH THEIR DISTRIBUTION IN DIFFERENT DISTRICTS

Family/Genus	Species	Form	Site of Collection								
			Jha	Mor	Sun	Sap	Ud	Il	Kath	Lal	Dh
UNIONIDAE											
Lamellidens	*marginalis* (Lamarck, 1819)	—	+	+	+	+	+	+	-	-	-
Lamellidens	*corrianus* (Lea, 1834)	—	-	+	+	+	-	-	-	-	-
Lamellidens	*jenkisianus* subsp. *obesa* (Hanley & Theobald, 1877)	—	-	+	+	-	-	-	-	-	-
AMBLEMIDA											
Parreysia (Radiatula)	*bonneaudi* (Eydoux 1838)	—	-	+	+	-	-	-	-	-	-
Parreysia (Radiatula)	*caerulea* (Lea, 1831)	—	+	+	+	+	-	-	+	+	-
Sphaerium	*indicum* (Deshayes, 1854)	—	-	-	-	-	-	-	+	+	-

Abbreviations: Il - Ilam, Jha - Jhapa (Mechi zone); Mor - Morang, Sun - Sunsari, Dh - Dhankuta (Koshi zone); Sap - Saptari, Ud -Udayapur (Sagarmatha zone), Kath - Kathmandu, Lal - Lalitpur (Bagmati zone)

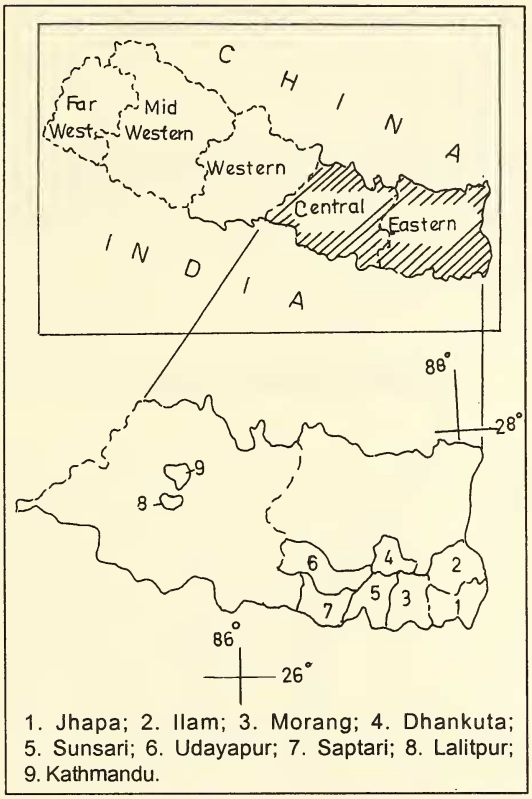
of Nepal. Godwin-Austen (1910) and Majupuria (1981-1982) have reported a few species of land and freshwater molluscs collected from Nepal's Kathmandu valley. This paper presents a list of the freshwater molluscs collected during a survey of nine districts, representing four zones of Nepal. The survey was initiated in 1993, to make a comprehensive checklist of the molluscan species of Nepal and continues to be done twice a year, during August-September and December-January.

The molluscs of 9 districts, namely Ilam, Jhapa, Morang, Sunsari, Dhankuta, Saptari, Udayapur, Lalitpur, and Kathmandu, representing four zones (Mechi, Koshi, Sagarmatha and Bagmati) of Nepal, were collected from various waterbodies, such as ponds, ditches, lakes, and channels (Table 1). A nylon net was used to collect live molluscs from water, while the dry shells were hand picked. The colour and morphology of the fresh and dry specimens along with their habitat and sites of collection were recorded. Live specimens were preserved in 5% formalin for further identification. Preston (1915), Tonapi (1980), and Subba Rao (1989) were used to identify the specimens. Identifications were confirmed by the Zoological Survey of India, Calcutta.

A total of 25 species of freshwater molluscs were recorded in nine districts, of which 19 were gastropods and 6 belonged to Bivalvia (Pelecypoda). The molluscan species and their collection sites are given in Fig. 1.

Of the 25 species in this collection, only 2, namely *Bellamya bengalensis* f. *nepalensis* (Kobalt 1909) and *Lymnaea (Galba) andersoniana* (Neville 1881) have already been reported from Nepal (Subba Rao, 1989).

Some of the species were abundant at some sites, but rare or absent at others. This appeared to be due to the diverse climatic and ecological conditions of the collection sites. For instance, *Bellamya bengalensis* f. *nepalensis* and *Lymnaea (Galba) andersoniana* were abundant in Lalitpur and Kathmandu, but not recorded in any other area. Likewise, *Bellamya dissimilis* and *Bellamya bengalensis* f. *typica* were abundant in the ponds of Jhapa, Morang, Sunsari and



1. Jhapa; 2. Ilam; 3. Morang; 4. Dhankuta; 5. Sunsari; 6. Udayapur; 7. Saptari; 8. Lalitpur; 9. Kathmandu.

Fig. 1: Distribution of freshwater molluscs in the eastern and central regions of Nepal.

Saptari (all in the Terai region), but they were rare in Ilam and Dhankuta (all in hilly areas). *Physa acuta* was recorded in Morang as well as in Lalitpur district. *Sphaerium indicum* was recorded only in Lalitpur district. However, overlapping and uneven distribution of molluscan fauna is common. As this report is from a study area of nine districts of Nepal out of a total of 75, nothing can be said conclusively about their distribution. Further studies may indicate their distributional trends. Three other zones (Janakpur, Narayani and Gandaki), covering 12 districts have already been surveyed and the collection is being studied.

ACKNOWLEDGEMENTS

We thank the Director, Zoological Survey of India, Calcutta, for the identification and confirmation of our collection, and Dr. A. K. Ghosh, Head, Dept of Zoology, P. G. Campus, Biratnagar for encouragement. We also thank Mr. Narayan Mani Jaisi, Ms. Neela Subba, Mr. Dipendra Raj Subba and Mr. Shering Raj Subba for co-operation and help during the survey and collection.

September 9, 1998

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